Proposed Statement of Work
and Budget

for

The Montana Department of Transportation
Stage I Research Problem

Industry Best Practices (checklists, process metrics and templates) for Application Development Processes)

submitted by

Dr. Gary Harkin
Professor of Computer Science
Montana State University
Bozeman, Montana
harkin@cs.montana.edu
406-994-5998

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Problem Statement

The MDT Information Services Division, Application Bureau has aligned all our Software Application Development business processes with accepted industry best practices and methodologies using Institute of electrical and electronic engineering Computer Society (IEEE), the International Software Engineering Institute (DEI), the International IT Infrastructure Library (ITIL), the Project Management Institute (PMI), the Gartner Group, and the National Association of State Chief Information Officers (NASCIO) as resources. The next step in the process is to obtain *INDUSTRY BEST PRACTICES (CHECKLISTS, PROCESS METRICS, AND TEMPLATES) FOR EACH STEP AND PHASE OF THE MDT SOFTWARE DEVELOPMENT LIFE CYCLE (SDLC) PROCESSES.*

Research Proposed

These Industry Accepted Best Practices and Methodologies checklists, process metrics, and templates for each step of the SDLC are not readily available from one source but could be cooperatively collected through numerous professional sources and Universities. This proposed research will involve the compilation and synthesis of this information as it pertains to the standard SDLC for MDT.

Key Assumptions

Complete documentation for the current MDT SDLC process will be available.

Scope of Work

This research requires that the contractor identify areas in the MDT SDLC that do not meet current industry standards or fail to be complete or consistent and propose changes. The analysis will be based on the documents provided by the MDT that define the SDLC instruments, including templates, checklists and procedure documents.

A preliminary examination of those documents indicates that the current SDLC is mostly complete, but not refined in many places. The contractor will work with SDLC personnel to identify areas that are incomplete and recommend additional instruments based on methods and procedures currently accepted as industry standards. In addition, a complete analysis of the existing instruments will be provided indicating areas of inconsistency and duplication and suggested metrics to use in evaluating responses. A final proposal will be the result of collaboration between the contractor and the MDT to insure that the results meet the needs of the MDT.

Documentation on the use of the instruments will be provided in the form of question-by-question instructions. All documentation will be provided in electronic form.

The contractor will perform the following work:

- Through a thorough analysis of the existing MDT SDLC data collection instruments, identify areas, which are incomplete, inconsistent or

inadequate to meet the needs of the MDT, or fail to meet industry best practices recommendations.

- Propose modifications to correct those problems so that all instruments:
  1. have a consistent standard format,
  2. meet industry best practices standards,
  3. are designed to avoid duplication of information and effort,
  4. properly relate business processes to technical requirements,
  5. provide adequate foundation for technical decisions,
  6. and accurately represent the business process needs of the MDT.
- Provide documentation on the use of instruments including the purpose for each instrument and guides for proper completion.
- Reduce high-level templates to a level of detail sufficient for the purposes of the MDT.

Deliverables

1. Where needed, new SDLC instruments in the form of modified or additional templates and checklists.
2. Where appropriate, suggested process metrics for the SDLC instruments.
3. Documents describing the purpose of each instrument and guidance for completing the instrument.

MDT Support Required

The proposed work specifies that the work is to meet the needs of the MDT, so successful completion requires significant input from and interaction with the employees of the MDT responsible for the SDLC. It is assumed that this cooperation will be available in the form of face-to-face meetings and correspondence.

Timeline

All times are based on a March 1 start date.

Task	Description	Early Time	Late Time
1	**Analysis of the current SDLC**	**5/15/05**	**6/1/05**
2	**Initial proposed modifications**	**7/1/05**	**7/15/05**
3	**Final proposed modifications**	**8/15/05**	**9/1/05**
4	**Documentation and final report**	**12/1/05**	**12/15/05**

Budget

Direct personnel costs	$15,000
Benefits	3,750
Travel	800
Indirect costs at 20%	3,910
Total	23,460

Research Team

Gary Harkin has a Bachelor's of Science and Master of Science degrees in Industrial and Management Engineering from Montana State University and a Ph.D. degree in Computer Science from Washington State University. He has been a faculty member in the Industrial Engineering and Computer Science Departments at Montana State University since 1974. He has been actively involved in teaching, research and consulting during that time, including the design of the first software engineering course taught at MSU. He has worked on a number of large software development projects and served as the Director of Software Engineering for Video Lottery Consultants.

Ray Babcock has a Bachelor of Science in Electrical Engineering and a Master of Science in Computer Science from Montana State University. He has been a faculty member in the Computer Science Department since 1980. During that time he has been active in teaching and research and he has taught the software engineering course for many years.

Hunter Lloyd has a Bachelor of Science in Accounting from the University of New Mexico and a Master of Science in Computer Science from Montana State University. He has been a faculty member in the Computer Science Department since 1997. In addition to teaching a variety of courses, he has been active in consulting work and has developed a Java-based commercial restaurant management system.